

## IN THE CLAIMS

Claims 9-15 (Group II), 30-34 (Group III), and 35-36 (Group IV) have previously been cancelled without prejudice as being drawn to non-elected distinct inventions under 35 U.S.C. § 121.

Claims 4-8 and 29 has also previously been cancelled without prejudice.

Please amend claims 1, 16, 22, and 37.

Please enter the pending claims, including claims 1-2, 16-28, and 37 (Group I), as follows:

1. (Currently Amended) A method comprising:

providing a substrate;

forming an array in a first photoresist layer over the substrate with a high resolution system and a large depth of focus wherein the array comprises repeating parallel lines and spaces;

forming arbitrarily-shaped features in a second photoresist layer above the array with a low resolution binary system, wherein the arbitrarily-shaped features overlap some of the lines and spaces in the array;

resizing in a direction perpendicular to the lines and spaces in positions where the arbitrarily-shaped features do not completely overlap the lines and spaces in the array;

etching the substrate through portions of the array not covered by the arbitrarily-shaped features;

reducing continuity of the lines and spaces overlapped by the arbitrarily-shaped features; and

introducing irregularity into the array.

2. (Previously Presented) The method of claim 1, wherein the forming the array in the first photoresist over the substrate and the forming the arbitrarily-shaped features in the second photoresist layer above the array comprise exposure with the same wavelength.

3.-15. (Cancelled)

16. (Currently Amended) A method comprising:

interfering a pair of collimated laser beams to illuminate a first photoresist layer on a substrate;

forming periodic lines and spaces in the first photoresist layer;

forming arbitrarily-shaped features in a second photoresist layer above the periodic lines and spaces, wherein the arbitrarily-shaped features shield portions of the periodic lines and spaces;

resizing in a direction perpendicular to the periodic lines and spaces in positions where the arbitrarily-shaped features do not completely overlap the periodic lines and spaces in the array;

forming a series of trenches in the substrate below the portions of the lines not shielded by the arbitrarily-shaped features;

eliminating continuity of the lines that are shielded by the arbitrarily-shaped features; and

introducing irregularity into the periodic lines and spaces.

17. (Previously Presented) The method of claim 16, wherein the introducing irregularity into the periodic lines and spaces comprises eliminating continuity of the trenches at different longitudinal positions along the trenches.

18. (Previously Presented) The method of claim 16, wherein the introducing irregularity further comprises exposing and developing the second photoresist layer above the periodic lines and spaces.

19. (Previously Presented) The method of claim 16, wherein the introducing irregularity further comprises transferring the arbitrarily-shaped features to the periodic lines and spaces.

20. (Previously Presented) The method of claim 19, wherein the introducing the irregularity further comprises etching the substrate below the periodic lines and spaces.

21. (Previously Presented) The method of claim 16, wherein interfering a pair of collimated laser beams comprises imparting, to the substrate periodic lines and spaces.

22. (Currently Amended) A method comprising:

patterning a first layer on a substrate using a first lithographic technique, the patterning providing alternating lines and spaces in [[a]] the first layer with a first pitch yielding a first  $k_1$  factor smaller than or equal to 0.5;

printing, in a photoresist layer using a second lithographic technique providing a second pitch, a first feature to overlap a first collection of one or more of the repeating lines and spaces at a first longitudinal position, a second feature to overlap a second collection of one or more of the repeating lines and spaces at a second longitudinal position, and a third feature to overlap a third collection of one or more of the repeating lines and spaces at a third longitudinal position, wherein

the first feature, the second feature, and the third feature are noncontiguous and wherein the second pitch is two or more times larger than the first pitch;

resizing in a direction perpendicular to the periodic lines and spaces in positions where the arbitrarily-shaped features do not completely overlap the periodic lines and spaces in the array; and

etching the substrate to transfer, to the substrate, a superposition of the lines and spaces with the first feature, the second feature, and the third feature, wherein the continuity of at least the first collection, the second collection, and the third collection is broken in the transferred superposition.

23. (Previously Presented) The method of claim 22, wherein patterning the first layer on the substrate using the first lithographic technique comprises providing alternating lines and spaces with the first pitch yielding the first  $k_1$  factor approaching 0.25 for a single patterning step.

24. (Previously Presented) The method of claim 22, wherein the first lithographic technique comprises interference lithography.

25. (Previously Presented) The method of claim 22, wherein the second lithographic technique comprises printing using a binary mask.

26. (Previously Presented) The method of claim 22, wherein printing the first feature, the second feature, and the third feature comprises using the second lithographic technique providing the first feature, the second feature, and the third feature with the second pitch yielding the second  $k_1$  factor greater than 0.5.

27. (Previously Presented) The method of claim 22, wherein breaking the continuity further comprises exposing and developing the photoresist layer.

28. (Previously Presented) The method of claim 22, wherein etching the substrate comprises etching a portion of the substrate not covered by the first feature, the second feature, and the third feature.

29.-36. (Cancelled)

37. (Currently Amended) A method comprising:

patterning a first layer of photoresist on a substrate using interference lithography to provide a collection of periodic lines and spaces having a first pitch;

patterning a second layer of photoresist using a second lithographic technique to provide an arbitrary feature with a second pitch, wherein the second pitch is two or more times larger than the first pitch and wherein the arbitrary figure comprises a first feature and a second feature that are noncontiguous and that each

overlaps one or more of the periodic lines and spaces at different longitudinal positions;

resizing in a direction perpendicular to the lines and spaces in positions where the arbitrarily-shaped features do not completely overlap the lines and spaces in the array; and

etching the substrate to transfer a superposition of the lines and spaces provided by patterning the first layer and the arbitrary feature provided by patterning the second layer to the substrate, wherein the continuity of at least one of the lines and spaces is broken at the different longitudinal positions in the transferred superposition.